

Ankle-brachial index

David Ponka MD CM CCFP(EM) FCFP Faisal Baddar MD CM CCFP

Contraindications

Acute ischemic limb.

Applications

Provisional diagnosis of peripheral arterial disease.

Equipment necessary

- A 5- to 10-MHz vascular Doppler probe with a narrow head. (In a pinch, a fetal probe can be used.)
- Acoustic gel
- Sphygmomanometer

Set-up

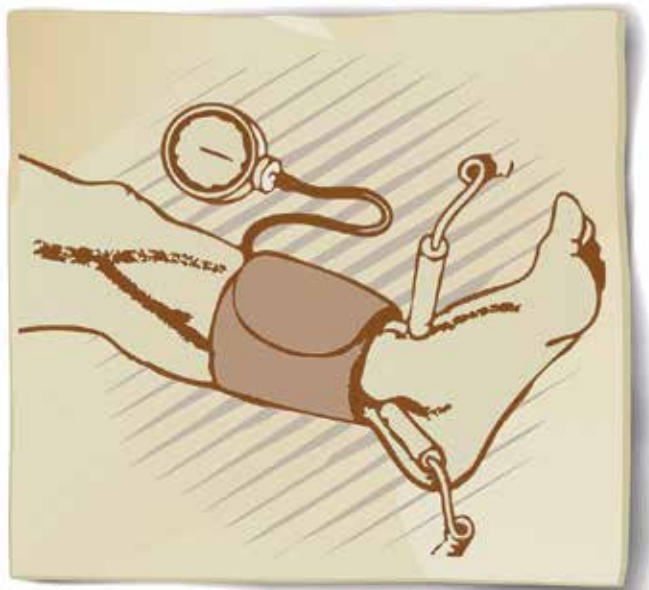
The patient lies in the supine position for this procedure. Take the patient's systolic pressure in each arm with the sphygmomanometer and Doppler probe (placed at the level of the radial or brachial artery) and record. Next, affix the cuff on the leg at the level of the calf and repeat, following the procedure described below. Avoid errors by keeping the probe on the artery while inflating the cuff.

Procedure

1. Using the Doppler probe, locate the artery with the strongest signal (either dorsalis pedis or posterior tibial); this is the one you will use for the test. To determine the pressure, the probe must be consistently at an angle over the artery in the direction of the signal.
2. Apply the sphygmomanometer and inflate until the foot signal disappears. Deflate until the signal is audible in the foot and record this value.
3. Repeat on the contralateral side.
4. Now you can calculate the ankle-brachial index for either leg by dividing the leg systolic pressure by the arm systolic pressure.

Evidence

In examining the femoral and popliteal pulsatility indices, ankle-brachial index, and, when available, angiography results, it was shown that a likelihood ratio of 3.0 could be attained for an ankle-brachial index threshold of 0.77¹ (or less), after correction



for verification bias. This corresponds to a stenosis greater than 50% anywhere in a lower extremity. ❁

Diagnostic confirmation

Formal Doppler studies and angiography can confirm the diagnosis. Consider referring the patient for vascular surgery if the ankle-brachial index is less than 0.80 or if clinical suspicion persists. ❁

Dr Ponka is Associate Professor in the Department of Family Medicine at the University of Ottawa in Ontario. **Dr Baddar** is a staff hospitalist at Pembroke Regional Hospital and a community preceptor in the Department of Family Medicine at the University of Ottawa.

Reference

1. Lijmer JG, Hunink MG, van den Dungen JJ, Loonstra J, Smit AJ. ROC analysis of noninvasive tests for peripheral arterial disease. *Ultrasound Med Biol* 1996;22(4):391-8.



The physical examination is facing extinction in modern medicine. The Top Ten Forgotten Diagnostic Procedures series was developed as a teaching tool for residents in family medicine to reaffirm the most important examination-based diagnostic procedures, once commonly used in everyday practice. For a complete PDF of the Top Ten Forgotten Diagnostic Procedures, go to <http://dl.dropbox.com/u/24988253/bookpreview%5B1%5D.pdf>.
